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UNIVERSITY OF ALBERTA

DEPRESSION AND COGNITIVE FUNCTIONING

by

SUSAN SHAW

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF ARTS

IN

SOCIOLOGY

EDMONTON, ALBERTA

FALL, 1990

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Dedication

For Bob and Amy

Abstract

The relationship between cognition and depression is explored. A review of the literature outlines current research on the relationship between depression and cognitive functioning, and a theoretic basis through which the results of the analysis of the analysis might be interpreted. In addition, a number of social variables which are expected to have an effect on the relationship are identified. LISREL VI analysis of a selection of variables taken from the NORC General Social Survey include eight measures of depression, four measures of cognitive functioning and three measures of religious identification as well as several measures of the respondent's social environment. Preliminary analysis indicated that the measures of depression could be used more accurately to define two underlying factors, the first reflecting the individual's sense of meaning in life, and the second corresponding to happiness. According to the outlined theory, these two factors are roughly equivalent to endogenous and exogenous depression. The final LISREL VI model indicated that cognitive functioning is a function of the respondent's sense of meaning in life, but not his or her happiness. Cognitive functioning has, in turn, a small reciprocal effect on meaning. A sense of meaning has a strong positive effect on happiness, and happiness has a small reciprocal effect. Cognitive functioning also has a negative effect on happiness, but there is no reciprocal

effect. Religious identification has a negative effect on cognitive functioning and cognitive functioning has a small negative effect on religious identification. Religious identification also has a small positive effect on meaning. A discussion of these results is followed by recommendations for future research.

Acknowledgements

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I. Introduction

This thesis is an exploration of the relationship between cognition and depression, and the social environment which might engender depression as a response. The idea for the analysis began with a conversation with Dr. B. G. Rule (1986). Dr. Rule indicated that physicians often ask their patients for a self-assessment of their memory as a gauge of the level of depression. Observation of patients had suggested that those patients who were depressed often claimed a decrease or deficit in memory or cognition that accompanied the onset of the depression, but this relationship had not yet been empirically substantiated. The cause and magnitude of the relationship between cognition and depression has been examined by a number of researchers (see Chapter 2), but the question of the existence of an actual relationship and the causal direction is as yet unresolved.

The thesis examines the theories of depression and cognition from both the psychology and the sociology literature. A number of issues which are peripheral to the theory and analysis are also briefly examined since they have some effect on the decisions made throughout the analysis process. The data used for this thesis was obtained from a social survey rather than using a psychological experimental model. This choice yields a much larger sample than would be feasible with an experimental model. The use of survey data also allows the introduction of a number of

social variables into the model. The use of social survey data restricts the analysis to non-clinical levels of depression, but an argument can be made which indicates that depression symptoms may represent at least two dimensions: endogenous and exogenous depression. Commonly accepted and used measures of depression include concepts similar to the measures used for the analysis in this thesis, such as negative views of the future, self-reported unhappiness and dissatisfaction or boredom with life.

Sociological theories based on symbolic interaction theory provide an indication of which social variables might have an effect on depression and/or cognition such as education, age and income. Viewed through the framework of symbolic interaction theory, the symptoms of depression (such as concern or focus on issues of death and dying, boredom with life, and concern with poor health) often appear to be a struggle for meaning (of both symbols and of life). This struggle appears even more pronounced when one considers the effect of depression on cognitive functioning or verbal understanding as suggested by this analysis.

Discussion of the theoretic basis through which the model can be interpreted is followed by an outline of the model and the results of the analysis. The conclusion discusses the major findings and the theoretical framework which helps us to understand them.

II. Psychological Theory and Definitions

A. Theories of Depression

Depression is a concept which has been a focus within the social psychological tradition since Freud began to formulate his theories of the human psyche. Early psychoanalytic theories of depression are no longer popularly accepted, but a number of recent theories do exist which explain more adequately the phenomenon of depression.

The most basic problem researchers are faced with is an understanding of emotion. In order to define depression, one must first examine the question of what emotion is, and how it is experienced. From there, we may go on to further examine one aspect of emotion, namely depression.

Schacter (1962) suggested that emotion begins with a physiological arousal. This arousal then requires the individual to interpret the situation to determine which emotion is being experienced. Emotion is thus subject to a correct or an incorrect cognitive interpretation; given the individual's comprehension of his or her social surroundings he or she will interpret any physiological arousal as a corresponding emotional response. This theory has been greatly debated, since there is no way of knowing the order of the individual's actual experiences. Whether the emotional response, the cognitive interpretation or the physiological response occurs first or all occur simultaneously has been greatly debated. This issue is

unresolvable and, for the purposes of this research, irrelevant. That all individuals, regardless of cultural background, experience emotional responses to their environment is sufficient to this discussion.

J. A. Russell (1980) proposed a circumplex model of affect which effectively captures the two main continua associated with all affect. Russell suggests that affect may be either positive or negative and involve at the same time either high or low arousal. Anger and depression, for example, can be considered equally negative responses, but anger is associated with high arousal while depression involves low arousal.

Beck (1975) suggsts that depression may be more than a simple affective disorder - more than just an abnormal mood. 'The Diagnosis and Management of Depression' (1975) was long considered one of the most important texts on depression in the psychological literature. In this work, Beck outlines the various theories of depression and its symptoms. It is generally agreed that depression has five main symptom patterns: 1. alteration in mood 2. negative self-concept 3. self-punitive wishes 4. vegetative changes (anorexia etc.) and 5. changes in activity level. Beck set out a long and relatively exhaustive list of symptoms of depression. The scale he developed consists of an inventory of a subset of these symptoms.

The emotional manifestations of depression, according to Beck's inventory, include dejected mood, negative

feelings toward self, reduction in gratification, loss of emotional attachments and loss of mirth. The symptoms Beck labels 'cognitive manifestations' refer to the patient's attitudes about his or her environment, future or self. These symptoms include low self-evaluation, self-blame or self-criticism, negative expectations for the future, indecisiveness and distorted self-image. The depressed patient views himself or herself as unworthy, valueless and the source of all problems. He or she does not anticipate a brighter future or a solution to the current situation.

Delusions, occuring in more severe depression, are extreme examples of the cognitive symptoms identified by Beck. These include delusions of worthlessness and poverty, nihilistic and somatic delusions and, in severe cases, hallucinations. The patient believes he is worthless or is the source of all evil. The patient often indicates a belief that he or she is dying of some fatal disease or in some cases that he or she is already dead. Ideas of death and decay often preoccupy the depressed patient. Some parallel symptoms fall under the title of 'motivational manifestations'. The negative expectations and lack of confidence in decision making (due to low self-evaluation) lead to a paralysis of the will, escapist or suicidal wishes, increased dependency on others and a general decrease in positive motivation. This paralysis of the will indicates an involuntary loss of psychic energy, rather than a simple lack of interest on the part of the depressed

patient. Beck found, for example, that recovered patients would describe their mental state as sluggish, regardless of interest or intent.

The 'vegetative and physical manifestations' identified by Beck are difficult to separate from the motivational changes. The physical changes include loss of appetite and libido, disturbed sleep patterns and fatigue. Beck indicates two possible and opposing changes in activity level: retardation and agitation. Most depressed patients, according to Beck, exhibit a 'reduction in spontaneous activity' (p. 38). Every activity of the patient is slowed, often resulting in incomplete sentences and thoughts. Conversely, the patient may be agitated to the point of distraction. According to Beck, 'the thought content of the retarded patient appears to revolve around passive resignation to his fate. The agitated behavior appears to represent desperate attempts to fight off his impending doom' (p. 40). These symptoms suggest that depression affects much more than just the mood of the individual.

The symptoms of depression as outlined by Beck (particularly the motivational changes, low self-evaluation and preoccupation with death images) are relevant to my argument, and will be examined in greater detail at a later point in the discussion.

Beyond this simple outline of symptoms, researchers do not agree. Clinical levels of depression may be conceived of as an extreme example on a continuum beginning with normal

mood or transient sadness, or may be viewed as a discrete psychological disease. Although empirical research emphasizes this difference, it may not be entirely justified. Beck gives some evidence, for example, that the differences between neurotic and psychotic levels of depression are quantitative rather than qualitative. There is, however, little agreement concerning the differences between clinical levels of depression and normal mood fluctuations. All forms of depression, regardless of cause or severity, exhibit a number of the symptoms in varying degrees. Beck suggests that the differences between clinical and 'normal' levels of depression cannot be adequately defined until an etiolgy of all types of depression is developed.

There is some agreement that depression of clinical severity does exhibit a defined etiology. The onset is usually well-defined. There is a gradual progression of severity and spontaneous reversal of symptoms. Of significance to this research, there is a tendency toward recurrance. If sub-clinical levels of non-reactive depression were included in this etiology, a clear picture of the depression-prone individual might emerge. For the purposes of this research, the various manifestations of depression will be considered to lie along a continuum from normal (sad) mood to severe levels of psychotic depression, separated by cause into two types (endogenous and exogenous).

The distinction between endogenous and exogenous depression is often made in order to determine treatment method, but is not a completely uncontested categorization. Exogenous depression is a reaction to some obvious external cause whereas endogenous depression is reputedly caused by some biological or metabolic disturbance. It causes a dilemma for the diagnostician when the reputed cause seems insignificant, or the period for recovery extends beyond a 'reasonable' limit. The category of 'just cause' is open to interpretation, as is the physiological cause. It may become convenient to blame the genetic makeup of the individual if the diagnostician is not sympathetic to the depressed patient's reported cause, or if no obvious physiological cause is determined. Still, there is adequate evidence in support of this distinction (Beck, 1975).

Most researchers agree that some forms of depression are caused by a loss, and this depression is a healthy and natural part of the grief process. But a significant portion of complaint of depression comes from patients who do not recognize any significant cause. Depression may be caused, for example, by a number of physiological diseases, although these are not common. Physiological causes are not sufficient to explain all forms of endogenous depression. Many patients diagnosed with depression do not appear to have either external causes or biological causes.

Beck outlines a number of studies which suggest that endogenous depression might be hereditary since patients

with severe depression often have parents who are suicidal or alcoholic. However, such evidence does not rule out social causes. Childhood socialization may cause an individual to be more (or less) subject to the effects of stress, for example, or may teach the individual that that depression is an appropriate response. The distinction between endogenous and exogenous depression and their relationships to sub-clinical levels of psychological distress as discussed by theorists such as Becker (1968) and Lifton (1972) will be discussed in detail. First, however, we must consider the relevance of psychological well-being to daily cognitive functioning.

B. Depression and Cognition

Cognition is a vast area of study within the field of psychology. Cognitive functioning refers simply to the wide range of human mental activity from memory to problem solving - more commonly known as intelligence. A number of tests have been developed which attempt to quantify intelligence, memory and cognitive functioning of all types. Empirical research has been conducted to validate (or invalidate) these various tests.

There is some concern among researchers that a relationship between cognitive functioning and depression might exist. The depressed individual is usually found to be pessimistic about his or her own physical and cognitive abilities as well as about life in general. This clinical

result has led researchers to explore the relationship between depression and cognitive functioning more closely.

The relationship between actual memory functioning and memory complaint was examined by a number of researchers (Kahn,1975; Gass & Russell, 1969; Friedman, 1964; Popkin, Thompson & Moore, 1982). The general conclusion of these studies was that complaint is directly related to level of depression but was not related to actual memory functioning. The complaint of memory loss was considered to result from a greater susceptibility to negative stereotypes and to be symptomatic of the 'discrepant reporting of symptoms' typical of depressed patients. This interpretation agrees with Beck's notion that depression is maintained by negative stereotypes and 'distorted negative views of oneself.'

There is also a body of research which suggests the opposite to the above studies - that there is in fact a relationship between memory or cognition and depression (Sternberg & Jarvik, 1976; Colbert & Harrow, 1968; Cohen, 1982; Weingartner, 1981). Much of this research indicates that some form of impairment results from depression, although it is not clearly agreed upon exactly what form this impairment takes. Since depression involves a low state of arousal, it is possible that the disruption is not in the thought processes, but due instead to the influence of lowered motivation. This indicates that Russell's (1980) characterization of depression as a low state of arousal has implications for the role of motivation in the cognitive

impairment often associated with depression.

Overall, the clinical evidence is inconclusive. It has not yet been demonstrated if motivation causes a decrease in cognition, if cognition is itself decreased as a result of the depression, or if there is any change at all not due to the particular testing procedure. Most of the testing is conducted on clinically diagnosed depressed patients, comparing them to a 'normal' population who may or may not be mildly depressed. Changes in cognitive awareness might therefore be due to the specific etiology of clinically assessable levels of depression.

C. Summary

The psychology literature provides us with a definition of depression. There is also some evidence that cognitive functioning may be disturbed by depression. Researchers usually consider only clinically diagnosed depressed patients, leaving the relationship between cognition and non-clinical levels of depression largely unexplored. For some insight into the possible social causes of depression and the mechanisms through which depression might affect cognitive functioning, we now turn to the theoretical perspectives of sociology.

III. Sociological Theory and Empirical Support

A. Sociological Theory

Theorists from a variety of social psychological traditions have attempted to deal with depression. For most social theorists, it is the social nature of man which raises him above the level of animal existence. Marx (1989), for example, recognized and emphasized the significance of the social construction of human nature, society and our conception of reality. The conceptualization of human nature is cultural- and time-specific, created through the process of socialization. This concept was fundamental to Mead's (1934) theory of symbolic interaction, developed to explain how humans cognitively construct reality. Mead suggested that individuals develop a repertoire of symbols which define their social world. This is developed through interaction with others beginning at infancy. These verbally defined symbols are stored in the memory, for the individual to access whenever necessary. When confronted with an unusual situation or blocked action, the individual assumes the role of the other, becoming an object to himself. This allows him to understand himself as others would see him.[1] The human capacity for language is, according to symbolic interaction theory, the fundamental difference between

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[1]Language, as a set of common symbols, creates the same response in both the sender and the receiver. Language thus allows the speaker to take the role of the other and allows the social process to come into the speaker's cognitive field.

humans and other animals. This capacity for language defines human consciousness. Language is, according to Mead, the fundamental building block of society. The symbols, encoded verbally in memory, allow us to move freely in our social environment, defining each situation and acting accordingly. Whether we are able to act appropriately or not depends upon our range and understanding of previous experiences and our ability to extrapolate to unique situations.

Mills(1940) expanded on symbolic interaction theory to define and explain human motivation. Expanding on a concept first suggested by Burke (1936), Mills describes motive of intent as a rough description of the 'consequential situations and surrogates for actions leading to them' (Mills, p. 905). 'Language is taken by other persons as an indicator of future actions' (Mills, p. 904). He describes human behavior as defined and directed by a vocabulary of motives. Motives in this framework are subjective reasons for action - aspirations which have taken on a verbal form. Individuals define appropriate behavior verbally and, through this vocal definition, transmit culturally defined appropriate behavior to others. Motives are words used to realign the actions of the actor and those to whom the motives are communicated. Vocabularies of motives are constantly evolving as new situations arise that were previously undefined. Role definitions and stereotypes are culturally accepted forms of this vocabulary which are often vague or negative.

This emphasis on the importance of language to motivation could be linked (although Mills never did) to depression and cognitive functioning. If motives and alternatives are verbally defined, those with a poor vocabulary would be at a disadvantage when actions are frustrated or alternative actions need to be articulated. Symbolic interaction theory as defined by Mead and Mills does not, however, deal adequately with affect. Language is a fundamental component of that which separates man from animal, but the capacity for joy, empathy or sorrow are an equally significant part of human life. Since we experience these emotions as symbolic animals, we need a theory which captures this unique blend of emotion and symbol. In more recent years, a number of theorists have attempted to deal with affect within the framework of symbolic interaction. The link between depression and cognition hinted at above was elaborated by two theorists in particular. Becker and Lifton proposed similar arguments central to this research and a discussion of the contributions of each follows.

Becker (1968) forms a synthesis of several schools of thought, including neo-Freudian and symbolic interaction, to develop a theory of depression which, although difficult to operationalize, has immense value as a paradigm for interpretation. Becker was concerned with the human consciousness of personal mortality and the ways people deal with this awareness. He developed his thesis through the paradigm of symbolic interaction, adding elements and

insights from various disciplines. Although Becker makes no distinction between endogenous and exogenous depression, his work is relevant for us since he defines the possible links between depression and cognition in two possible causal directions.

According to Becker (1968), the individual learns appropriate behavior through experimentation as he or she is exposed to different situations throughout childhood. If the child is curbed or exposure to a variety of situations is discouraged, the natural ability to learn by trial and error becomes paralyzed in certain areas. It is in these areas where the individual learns to mistrust his or her own judgement. People also vary, according to Becker, in the amount of adaptive intelligence which can help them deal with new situations. As adults, any unfamiliar situation requiring new conduct is a source of anxiety. 'Depression...is basically a problem of behavioral stupidity' (Becker, 1968; p. 162). If the individual is unable to construct new and appropriate ways of acting in these threatening situations, the only alternative is withdraw from life into a state of neurosis. The depressed individual cannot understand the elements of his failure to perform in a self-satisfying manner. If the individual fails to create his own life according to his own desires, he retreats from life.

The creative powers of the individual are of central importance to Becker's thesis. Man is born without the

instincts of animals, but instead has the capacity for language and symbolic creation. 'People break down when the world about them does not reflect the active involvement of their own creative powers' (Becker, 1968; p. 164). Everyday events and frustrated actions cause depression for those who feel a greater need to create a self which outlasts his or her own mortal span or at least to have some impact on the world. It is this relationship between language, symbolic creation and the frustration of the individual's attempts to control his or her environment which is of vital importance to our study.

Becker (1973) supports Mead's argument that it is language and consciousness which sets man apart from animals. Unfortunately, these naturally force man to contemplate his own mortality - without language and symbolic meaning this contemplation would not be possible. The idea and fear of death 'haunts the human animal like nothing else; it is the mainspring of human activity' (Becker, 1973; p. ix). This activity is designed, according to Becker, 'to avoid the fatality of death, to overcome it by denying in some way that it is the final destiny of man' (Becker, 1973; p. ix). Avoidance explains such diverse phenomena as the search for fame, religion and religious fanatacism, and the overpowering depression experienced with the loss of a loved one.

Becker explains individual action in terms of three distinct but interdependent 'dimensions of striving'. The

first dimension is that of the strain between the spiritual and the physical experience. This strain results in the problem of linking behavior with an appropriate symbolic vocabulary. The second dimension is that of the individual in time. The strain between early training and the adult experience can develop into an inflexible lifestyle if the childhood is particularly restricted. The third dimension is individual action in space. Since the world is socially defined, a problem arises for the individual when he cannot develop behaviors to deal with a new situation appropriately. It is when the individual does not have a wide enough vocabulary of symbols and behaviors, in conjunction with low self-esteem (so he or she does not trust his own judgement to create new vocabularies) that he or she becomes depressed or otherwise exhibits unusual or neurotic behavior.

Becker argues that the classic Freudian and neo-Freudian theories of depression as repressed hostility and introjected guilt do not adequately explain or describe the process of depression. Using examples from other cultures, Becker describes actions which indicate that depression is not confined to Christian beliefs of guilt. Much of the problem of modern theories of psychoses, according to Becker, is that the theorists attempt to explain disorders or aberrant behavior from an ethnocentric point of view. Depression is found in all cultures and, he suggests, results from a loss of self-esteem. Depression is

a method of justifying the past and giving meaning to the present. When an individual lacks significant people with whom he or she feels capable of performing successfully and meaningfully, or is unable to act appropriately in a given situation, self-esteem is lost. This loss of self esteem accounts for the negative distorted self-image that Beck found prevalent among depressive people, as well as the feelings of worthlessness and lack of a sense of belonging. Self-accusation provides a justification for the sense of failure and worthlessness the individual suffers.

Poor memory, whether real or imagined, is one of these forms of self-accusation, and the second possible causal connection between depression and cognitive functioning which Becker proposes. Although the justification is negative in context, it is nonetheless preferable to the alternative that life truly is meaningless. By retreating into depression and self-accusation, the individual is able to feel some sense of justification, though negative, which is preferable to the thought that most people will not entertain: namely, the possibility that life has no meaning. Life has, for a symbolically oriented, culturally grounded individual, a beginning, an end and a meaning. 'When the end is in sight, and the meaning upon which one has predicated his whole life is undermined, any adaptation which makes the situation tolerable is accepted' (Becker, 1973;p. 143). If the individual cannot justify his situation by deserving failure, his entire life and not just his present becomes

meaningless. He thus settles for a pseudo-death (with some recognition of an after-life in recovery) to avoid facing a total loss of meaning.

Becker suggests that continuing social support is vital to the individual's psychological well-being. All individuals need to perform meaningfully for someone. With the loss of parents, spouse or children, the extended family can play a vital role in helping the survivor deal with the loss. As well, a belief in a life after death where a just retribution awaits those who were unable to achieve all they wished for in life also helps the individual deal with setbacks.

Although Becker outlines the social causes behind depression and the relationship between depression and cognition, he does not distinguish between exogenous depression caused by some form of loss, and endogenous depression caused by a frustration of actions. For a sociological explanation of this distinction, we must turn to the work of Lifton (1976), although Lifton does not himself consider the distinction particularly important.

Lifton uses a dialectical approach which makes a summary of his work difficult, but he discusses a number of key concepts relevant to our discussion. Death is, for Lifton, equally as important as it is for Becker. Confrontation with death or death equivalents[2] is a

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[2] 'Death equivalents' is Lifton's term referring to the experience of the death of a loved one, or some significant confrontation with the death of another.

fundamental motivator of human behavior.

Lifton (1976) portrays the mechanisms behind depression in a manner similar to Becker, describing human behavior as based on symbolic interaction with the environment. For Lifton, personal feelings of vitality are crucial to continued positive functioning. The impairment of these feelings can occur on the proximate level or on the ultimate level. 'Proximate' refers to the direct and immediate (not necessarily symbolic) experience of the individual while 'ultimate' refers to the highly symbolic, indirect (and not necessarily immediate) experience. It is this differentiation between proximate and ultimate cause which make Lifton's work vital to our analysis because the distinction roughly parallels or at least suggests the distinction between endogenous and exogenous depression.

According to Lifton, impairment of personal feelings of vitality occurs on the proximate level due to some form of loss. This loss may take the form of frustration of actions or actual personal loss such as Becker discussed. This concept evokes Beck's notion of exogenous depression. Impairment occurs on the ultimate level due to an absense of significant symbols beyond the self, such as religious beliefs, or to a confrontation with personal mortality, again similar to Becker's concepts discussed previously. Impairment on the ultimate level is basically a problem of meaning. This form of impairment is, I would argue, roughly parallel to Beck's description of endogenous depression

(excluding those few who are suffering from some measureable form of physiological imbalance).

Psychic numbing is, Lifton suggests, the most common characteristic of depression and is an imitation of death. In reactive or exogenous depression (in reaction to a loss or obvious stressor), much of the individual's reason for living has been removed and he reacts by withdrawing from life. The individual, rather than becoming narcissistic as psychoanalysis would suggest, is in fact trying to block out emotional pain by denying feeling altogether. The low arousal typically found in depression is, according to this view, an inability for action. The individual can either act or retreat, and psychic numbing or 'static negativism' is more comfortable than facing continued failure or loss. The 'burnout' phenomenon, often referred to in the popular press, may be an example of this state of low arousal. Lifton emphasized the continuity between normal sadness and the extremes of the Hiroshima survivor and the 'Musselmanner' (a total psychic numbing created in the Nazi death camps).

Lifton (1976) uses the terms 'depression' and 'despair' to refer to the two types of impairment. The description of depression as feelings of helplessness suggests a sense of temporary disorder due to external reasons. Lifton's discussion of 'depression' resembles Beck's concept of exogenous depression. The hopelessness of despair indicates a lack of belief in some form of ultimate symbolic

immortality. The person who despairs may not be depressed, but has no sense of a reason for his own existence. Despair predisposes a person to depression and prolongs or prevents recovery. Lifton's concept of despair resembles endogenous depression as previously discussed: it has no immediately apparent external source and appears to be an antecedent conditioning factor.

Lifton's characterization of the impairment of personal feelings of vitality on the proximate or ultimate level producing feelings of helplessness or hopelessness is consistent with the changes in activity level identified by Beck. Beck suggested that the changes could take the form of retardation or agitiation, and his explanation of the reasons for this reaction closely parallel those of both Becker and Lifton.

The work of Becker and Lifton indicates the mechanisms whereby depression - particularly exogenous depression - becomes the appropriate or learned reaction. Depression is a weak adaptive reaction to trauma when an individual is unable to verbalize or envision alternative paths. Lifton's distinction between depression and despair indicates that endogenous depression (despair) is a psychologically deeper maladaptive world-view. One need not be despairing to be depressed, nor vice versa. Despair is an internal, learned state of maladjustment. Both Lifton's and Becker's discussion suggests that this internal state or world-view originates in the atmosphere of the individual's formative

years.

This theoretical framework indicates that endogenous depression results from an inability to verbalize or envision alternative solutions to a given problem, and both theorists suggest that the despairing person lacks a belief in an ultimate reason for his or her own existence. This is not to say that they are more or less deluded than those without the predisposition toward despair; simply that this belief is non-existent. The causal link to cognitive functioning goes both ways. Those with lower levels of cognitive functioning are more likely to become depressed, and those who are depressed are more likely to experience temporary cognitive problems either because of reduced psychic energy or as an alternative to facing the true cause of their depression (death).

B. Depression and Anomia

Although the theories of both Lifton and Becker offer adequate explanations of the causes and mechanisms behind man's symbolic construction of reality and the implications of the effect of language ability on depression and cognitive functioning, neither theory offers concepts which are easily operationalized. Neither author intended the differentiation between types of depression, but following preliminary LISREL (Joreskog & Sorbom, 1979) analysis which indicated two separate dimensions, the difference between endogenous and exogenous depression has been emphasized

throughout this thesis. In order to determine how endogenous depression and exogenous depression can be measured separately, we must now turn to Srole's work based on Durkheim's concept of anomia[3].

Srole (1956) adapted Durkheim's concept to reflect the individual's (rather than the societal) experience of anomia and developed a scale to measure anomia in the general public for use in survey research. His intention was to examine the individual's position in and ties to society. For reasons of applicability, and because Srole's conceptualization of the individual experience of anomia corresponds so closely with the concept of endogenous depression outlined above, this scale will be used for our analysis. "The two terms (eunomia and anomia) can be adapted with some license to refer to the continuum of variations in the integratedness of different social systems or subsystems...they can also be applied to the parallel continuum of variations seen from the microscopic... view of individuals as they are integrated in the total action

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[3]Durkheim attempted to deal with the tendency toward greater levels of suicide during periods of economic boom as well as slump on a societal rather than an individual level. He developed a theory to explain this phenomenon centered on the Greek terms 'eunomia' and 'anomia'. Eunomia refers to a well ordered society and anomia its opposite. He suggested that, in the normal process, aspirations change at a decreasing rate, approaching a static state. In the anomic process, however, aspirations change at an increasing rate, without a limit. It is only when normative social control is absent that aspirations change anomically. Durkheim was able to demonstrate how suicide rates vary on a societal level according to economic influences of growth and decline, but his model did not deal with the individual's experience of anomie.

fields of their interpersonal relationships and reference groups"(p. 710). This scale, according to Srole, measures more than the 'cumulative consequences of his (the individual's) particular integrations in his current social roles and groups' (p. 711). The scale measures a world view influenced by the socialization processes of childhood which condition expectations, value orientations and behavioral tendencies. The level of anomia is therefore dependent on both social and psychological factors. The anomic individual is one who lacks strong ties to his or her society and has no sense of a personal future (corresponding to Lifton's concepts of separation, disintegration and stasis respectively). This sense of hopelessness and personal mortality are strongly communicated in the anomia scale.

Depression Scales and Anomia

As Gurland (1976) noted, the reliability and validity of any testing procedures throws the results of any research into question. One of the main problems is the issue of validity. Is the test actually examining the variable that it is intended to measure? Many of the standard tests intended to determine the level of depression are based on the report of symptoms which could equally be defined as causal rather than symptomatic of depression. There is no attempt at differentiating between endogenous and exogenous depression, except as defined by asking a generic question regarding the number of traumatic events in the past year.

By considering the two types of depression as qualitatively different and developing measures with this difference in mind, the social causes of endogenous depression and the relationship between endogenous and exogenous depression and cognitive functioning might become more clear.

The Geriatric Depression Scale developed by Yesavage and Brink (1983) includes several questions that Srole developed to determine level of anomia. For example, the G.D.S. asks the respondent if he or she worries about the future (an ambiguous question regarding personal vs. world future). Srole's fourth question on the Anomia scale asks the individual more specifically whether or not they feel that it is fair to bring a child into the world the way things look for the future, thus specifying world and not personal future. These two questions identify a similar attitude which Srole suggests is the closest to Durkheim's original concept of anomie included in the Srole Anomia Scale. "The fourth component postulated (by Durkheim)...was the deflation or loss of internalized social norms and values, reflected in the individual's sense of the meaninglessness of life itself." Lifton's discussion of despair as the lack of belief in ultimate symbolic immortality and Becker's concern with the importance of the meaning of life are both reflected in this question. Other questions regarding self-worth included in the G.D.S. also relate to the individual's sense of belonging, as having some intrinsic worth and as being a necessary part of the

society. Several of the questions refer to transient sadness (Do you often fell downhearted and blue?) while some may be confounded with illness or the physical changes typical in the aging process (Do you have trouble getting up in the morning). Several questions, like the first mentioned above, are ambiguous or poorly worded and occasionally unrelated to actual symptoms of depression. For example, the question: do you prefer to stay home at night rather than go out and do new things? asks two very different questions. First, it is not the preference to stay home at night which is symptomatic of depression, but a change in preference which points to possible problems. Second, the interest in doing new things need not be related to going out, nor to night-time activity, but simply left as the willingness to try new things. During administration of this test, subjects often have difficulty answering the questions because of these ambiguities. Although this scale has many problems, it is considered to be one of the best measures available (Cohen, Crosby & Zemom, 1988).

The PERI Depression scale is another example of a commonly used scale and is specifically designed to determine (1) a depressed mood state;(2) a self deprecatory attitude; (3) feelings of helplessness and hopelessness and (4) suicidal tendencies. Again, some of the questions are similar in both concept and content to Srole's Anomia scale. The Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R) is the standard measure used by psychiatrists.

This measurement tool includes a list of symptoms for diagnosing depression. A patient must exhibit at least five of the thirteen symptoms in a two week period and these symptoms must represent a change from previous behavior. In addition, at least one of the symptoms must be self-professed depression or loss of interest (in the absense of organic disorder). The diagnostic ambiguity of the DSM-III-R allows a diagnosis of depression on an extremely subjective basis, thereby seriously reducing the reliability of the test. The inclusion of a focus on death, feelings of worthlessness, indecisiveness and diminished ability to think do, however, add support to Becker's thesis while glossing over the distinction between the types of symptoms and, I would argue, between two different types of psychological distress.

Depression scales typically combine the symptoms of both endogenous depression and exogenous depression to obtain one overall score. I would suggest that this greatly complicates the relationship between memory and depression as suggested in the psychological and psychiatric literature mentioned above, since the effects of anomia have not been considered by these researchers and cannot therefore be partialled out of their research. Rather, the two types of depression could be measured separately and assessment of the effects on cognitive functioning made accordingly.

C. Unhappiness and Exogenous Depression

Happiness fluctuates with trauma and stress and is conceptually parallel to exogenous depression as discussed above. Whether an individual claims he or she is happy or satisfied with life depends on the number of stressors and the ability of the individual to maintain a level of stability in the face of these stressors. Daily maintenance habits such as eating and sleeping are often temporarily affected by such trauma, but the effects of exogenous depression are usually transitory. This transitory nature does not mean that exogenous depression is irrelevant or insignificant - only that it is different than, and therefore should be measured independently from, endogenous depression. There is scant empirical or even theoretical support for this approach, since most attempts to measure depression have focused on the entire range of symptoms which include both exogenous and endogenous depression. Ignoring the fundamental difference between the two types of depression unnecessarily disguises the causal sequence and the relationship between depression and cognitive functioning.

Srole's anomia scale measures, I would argue, a psychological component corresponding to Lifton's concept of despair or endogenous depression. Becker's discussion of endogenous depression is similar to Lifton's, although Becker did not distinguish between endogenous and exogenous depression. Srole's questions indicate the individual's

sense of mistrust, lack of social ties and lack of belief in a reason for personal existence - in other words, despair. Other questions normally included in measures of depression focus on transient happiness or exogenous depression which Lifton referred to as 'depression' (when distinguishing depression from despair). For the purposes of maintaining clarity, the terms endogenous depression and exogenous depression will be used to refer to the two dimensions of depression Lifton refered to as despair and depression.

D. Antecedent or Causal Variables

Although there is little empirical support for the social causes of depression (particularly endogenous depression), the theoretical framework outlined above indicates some of the most important possible influences.

The exogenous or causal variables to be considered for this analysis include parents education, strength of religious identification, family, income, education, sex, age, and number of recent traumatic events. A discussion of each variable and the reason for its significance follows.

According to Becker, if an individual suffered childhood constraints, as an adult he or she will be less able to adapt to new and unique situations. The childhood environment is therefore very important in determining whether the individual will be able to adapt to stressors or will opt for endogenous depression as an alternative coping strategy. One would expect, therefore, that the educational

attainment of the parents would condition the early environment. Parent's education thus affects both endogenous depression and cognitive functioning.

Religion would, according to the theoretical framework discussed above, satisfy the individual's need for a belief in an ultimate immortality. Berger (1967) attempts to explain this relationship in greater detail. Religion, Berger suggests, is central to the emotional well-being of the individual. Religion is a 'sacred canopy' which makes all mysteries of the socio-cultural world non-human in origin. This mechanism removes the responsibility for the socio-cultural world from the individual to an 'alien' being whose ways are incomprehensible. Witnessing the death of others, especially significant others, forces the individual to anticipate his or her own death which leads the individual to question the cognitive and normative operating procedures of his life. "Death presents society with a formidable problem not only because of its obvious threat to the continuity of relationships, but because it threatens the basic assumptions of order on which society rests. In other words, the marginal situations of human existence reveal the innate precariousness of all social worlds"(Berger, 1967;p. 24). Religious identification is thus identified as negatively related to endogenous depression due to its effect on the individual's belief in an ultimate symbolic immortality.

A number of studies have been conducted to determine the effects of religiosity on the individual's level of anomia, with inconclusive results. Olson (1985) found no relationship between religion and anomia, while Stack (1984), using the same measures based on a larger sample, found a significant relationship.

There is some empirical support for the argument that income and education have an impact on psychological distress (Gore & Mangione, 1983; Kessler & Neighbors, 1986, Dodder & Astle, 1980) and also on cognitive functioning (Pfeiffer, 19??). Income may act as a buffer to protect the individual from the effects of stress by allowing the individual alternative actions when the frustration of actions causes a potentially depressing situation. Those individual's with a less generous income are more more likely to suffer negative reactions to this type of stressor. Education also allow the individual access to alternative actions in the event of frustrated actions. Higher education also provides the individual with a wider range of symbols.

The literature indicates that gender and age have similar affects on both depression (Gore & Mangione, 1983; Haug & Folmar, 1986; Kahn, 1975) and verbal ability. Males in most cultures tend to be allowed to experience a wider range of experiences throughout the lifespan, and also have access to more education and greater income. Age naturally brings the individual in closer contact with death (his own

and that of significant others) and also allows the individual to accrue a wider vocabulary.

There are also a number of causes of exogenous depression suggested by the adapted theoretical framework discussed above. Recent trauma is, of course, the most important predictor of exogenous depression (Ferrarro, 1984). If an individual suffers a loss such as widowhood or temporary setback, we naturally expect a certain amount of sadness as a result. Perceived health status and marital status are also cited (Gore & Mangione, 1983) as significantly impacting levels of depression. The relationships charted in the literature are comprehensive, confusing and often contradictory. Only one published research paper attempts to

Only one published research paper attempts to do an analysis similar to that which is the focus of this thesis. Sigelman (1981) analyzed an earlier population of the NORC GSS using some of the same variables analyzed for this thesis. Using all 10 vocabulary items as a measure of intelligence, Sigelman attempted to use intelligence as a predictor of psychological well-being. He measured psychological well-being using an index created from a number of questions including the Srole anomia items and happiness variables. He found that there was no relationship between the cognitive task score (which he considered indicative of intelligence) and the happiness or life satisfaction variables, but even after controlling for these

factors, a negative relationship between anomia and intelligence remained.

E. Summary

Work in the field of psychology has given us a definition of depression and divides it into two types based on apparent cause. This body of research also indicates that there might be some relationship between cognitive functioning and depression, although the form of that relationship is unclear. The distinction between endogenous and exogenous depression was further expanded according to social-psychological theoretical perspectives and the link to cognitive functioning was discussed. Becker and Lifton indicate the mechanisms which cause an individual to react to unique situations through depression. According to the theoretical framework outlined previously, those who are more firmly tied to society and those who can easily conceive of alternative actions will experience only transient sadness when faced with traumatic situations. Those without these adaptive mechanisms will be more susceptible to depression. It is difficult to determine the causal connections between endogenous depression, exogenous depression and cognitive functioning, since symbolic interaction theory suggests that a lack of appropriate symbols interferes with adaptive strategies while Becker, on the other hand, also suggests that lowered functioning may be part of the depressive reaction, allowing the individual

to justify temporary failure. Given the possibility of two different causal orders, it is therefore necessary to outline the model on which this research will be based.

IV. The Model

Prior to describing the model tested for this thesis, it is necessary first to describe briefly the terminology to be used to describe the model. The model is defined based on the relative position of the variable with respect to the individual. Endogenous variables are those variables which are 'internal' to the individual - such as depression, cognitive functioning and religious identification. Exogenous variables are those variables which are 'external to the individual - such as income, education and age. Exogenous variables could be considered the social descriptors, while endogenous variables are the psychological descriptors.

The model examined in this thesis is complex, relative to most models presented in sociology. It specifies reciprocal effects of four latent endogenous variables on one another: endogenous depression, exogenous depression, cognitive functioning and religious identification. It also specifies the effects of these latent variables on the manifest variables that measure them. Despite the possibility of reciprocal causation, I believe that the primary causal flow is from depression (both types) to cognitive functioning and from endogenous depression to exogenous depression. The model also includes the effect of a number of antecedent or exogenous variables on anomia, happiness and cognitive functioning. These variables were necessary to identify the reciprocal effects between the

endogenous variables.

There are essentially three research questions to be tested by this model. The first question to be examined tests the validity of distinguishing exogenous from endogenous depression. Established in the psychological literature, this distinction is also found in Becker's and Lifton's respective discussions of depression. In short, I hypothesize that depression can be separated into two types - transient or exogenous depression and anomic or endogenous depression. Table 4.1 lists the theoretical approaches to the two types of depression and the operationalization of these terms used for the analysis.

Endogenous depression is without apparent external cause. The individual does not exhibit a sense of belonging, does not feel like a vital part of society, and does not have a strong commitment to his or her own continuing existence. This hopelessness reflects the individual's sense of anomia. The anomic individual may not be sufficiently depressed to be clinically classified as depressed, or may not be able to offer proximate causes for his depression. Anomia conditions the world-view of the individual, altering his or her perceptions of events, often causing the individual to react to seemingly insignificant events with exogenous depression or helplessness. The anomic individual has learned throughout life that he or she does not have a place in society, and does not have any 'sacred canopy' under which to hide. Anomia is a learned condition, created

4.1 Theoretical Approaches to Exogenous and Endogenous Depression

	Exogenous Depression	Endogenous Depression
1. Clinical basis for distinguishing	-immediate (apparent) environmental influences (e.g. death of spouse)	-no apparent immediate environmental cause
2. Clinical notion of etiology	-environment	-internal (mainly genetic or biochemical) -exact cause unknown
3. Sociological reinterpretation	-immediate events (same as clinical)	-possibly physiological, but also long-term effect of social structure during formative years (childhood and early adulthood)
4. Lifton's distinction	-'depression' -proximate imagery	-'despair' -ultimate imagery
5. Becker's distinction	-immediate events (confrontation with mortality)	-frustrated actions -inappropriate socialization
6. Operationalization	-sadness vs. happiness -boredom vs. excitement -sick vs. well	-anomia vs. eunomia -meaninglessness vs. meaning -hopelessness vs. hope

by the atmosphere of the childhood and early adult environment.

Exogenous depression is a temporary sadness due to some external trauma. The individual reacts to the external stress through temporary mourning or withdrawal, but is usually able to return to normal functioning. The symptoms include unhappiness, dissatisfaction with life and health, and changes in sleeping and eating habits. Whereas anomia is a learned behavior indirectly affected by traumatic events or stressful situations, happiness is more volatile. Although the two types of depression have different causes and consequences, they are correlated as outlined above.

The second research question concerns the reciprocal effects of depression and cognitive functioning on one another. Those individuals who are endogenously depressed (anomic) are more likely to perform poorly on cognitive tasks. According to the version of symbolic interaction theory outlined above, the anomic individual will react to stressful situations with a weakened vocabulary. This weakened vocabulary allows them to offer plausible excuses for their lack of control over their environment. A sense of anomia thus lowers cognitive functioning and creates a weak vocabulary. Reduced cognitive functioning can be interpreted (using Lifton's discussion) as the extension of psychic numbing to include the cognitive as well as the affective domain.

The third research question focuses on differences in the sociological variables which affect the two types of depression and cognitive functioning. Exogenous depression or transient happiness is less deeply rooted than endogenous depression and therefore subject to the effects of traumatic events.

Anomia is a learned world-view. Parent's education has a significant effect on level of anomia[4] since the educated parents will exert some influence to encourage the child to gain an equal or higher level of education. This influence acts on the individual by giving them a sense of purpose in life, of belonging and attachment to society. The experience and example of poorly educated parents will foster the attitude that society has no need of them, that others are out to take advantage of them, and that life is not rewarding. Depression (both endogenous and exogenous depression) is positively affected by strong religious committment. Religious committment helps the individual combat sadness.

Happiness or exogenous depression is negatively affected by traumatic events, hence the volatile nature of this type of depression. Lower levels of income also negatively affect happiness, since those with lower income are faced with the ongoing stress of insufficient income which is not included in the report of traumatic events.

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[4]An anomic view is also learned in institutions of higher learning. Those respondents with some post-secondary training will also be more anomic. The relationship between education and endogenous depression is therefore non-linear.

Of the exogenous variables used, we should expect that only three will have direct effects on cognitive functioning: Females should score higher on this task since females generally have a better verbal ability than males. Age should have a positive effect on the score as well, although this relationship may be non-linear due to the nature of the task. Cognitive functioning is improved through exercise - that is, cognitive and particularly verbal ability increases with education and practice.

V. Methods

A. The Sample

The data were gathered by the National Opinion Research Center in the 1987 and 1988 General Social Surveys. The sampling procedure used was a multi-stage probability sample. The first stage of sampling involved stratification of the primary sampling units (i.e. standard metropolitan areas) by region, age and race. The second stage of sampling was based on enumeration districts, stratified according to race and income. The third stage of selection was based on blocks selected with probability proportional to size. Households were selected on a probability basis and adults were sampled from households. Each respondent was randomly assigned to one of three sub-groups and a shortened form of the questionnaire was administered. The sampling procedure results in a marked decrease in the number of respondents who received the cognitive task as well as the various questions pertinent to this research. A number of possible measures which might affect the relationship had to be discarded due to this shortened form of the questionnaire.

I chose to restrict race to whites since the sample would yield too few blacks for an adequate analysis of racial differences. I also chose to restrict the sample to whites only to obtain greater comparability and thereby restrict any possible confounding effects of racial background. After combining the interviews from both

surveys, a total of 2456 cases were available, but the total number of complete cases used was reduced to 617 cases. The number of complete cases is smaller than necessary because we discarded cases with missing values on variables analyzed in the preliminary analysis but discarded in the final analysis. Much of the case reduction was random due to the random assignment of respondents to the subgroups. In any case, 617 is still a large enough sample for the analysis.

B. The Analysis

The main method of analysis used is LISREL VI, a trade name for a computer package which estimates structural equation models with latent variables. It combines confirmatory factor analysis with various types of regression models. This method solves two important problems of multiple regression.

When using ordinary regression, the problem of simultaneity bias arises. By simply inserting all pertinent variables into an equation, the regression test can determine whether or not a partial relation is significant, but ordinary regression methods cannot be used when there is reciprocal causation due to the problem of simultaneity bias. Simultaneity bias refers to the problem which arises when trying to measure the change in the dependent variable caused by the independent variable when there is a reciprocal effect. Simultaneity bias occurs because the equation disturbance will, by definition, covary with the

independent variable. This covariance is assumed to be zero in ordinary regression. LISREL (and LISREL-like programs) and simultaneous two-stage regression overcome the problem of simultaneity bias by measuring the effects of reciprocal causation in the model.

Simultaneous two-stage regression is, however, unsuitable for the type of analysis required since this analysis method is unable to measure either systematic or random error. Random error sources are considered random because they are independent of any of the other measures in the model, except the measure they affect. Random error in a bivariate regression leads to a downwardly biased estimate of the effect of the independent variable on the dependent variable. The direction of the bias in a multiple regression is unknown, however, since the downward bias is partially offset by the random error in the measures of the other independent variables. Systematic error occurs when an error term correlates with two or more variables in the model. The direction and magnitude of the bias effect of systematic error on the estimate of the effects of the independent variables on the dependent variables depends on the relation of the error to the other variables in the model. These two sources of measurement error can be controlled in LISREL, whereas they cannot be removed from either ordinary regression or simultaneous two-stage regression[5].

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[5]Control assumes proper specification of the error structure.

There are problems associated with using LISREL on the type of data used for this thesis. The majority of the variables to be analyzed are measured at the ordinal level and many at the dichotomous level. The LISREL VI program was designed for use on continuous variables and later adapted for ordinal data. LISREL VI can estimate tetrachoric and polychoric correlations for use in the confirmatory factor analysis equations, but this procedure is not as valid as using continuous variables. Tetrachoric and polychoric correlations estimate what the correlation would be if the variable (measured at an ordinal level) was actually measured to reflect the underlying continuous variable it is supposed to represent. A problem of using LISREL VI to analyze tetrachoric and polychoric correlations is that the program does not provide standard errors for tests of significance. Consequently, we chose to consider as significant any correlation greater than or equal to .10.

The cause-effect terminology used in the discussion of the results represents only my interpretation of the results, rather than the results themselves. There is no actual measure of the cause-effect relationship, since none of the putative causal variables are manipulated experimentally.

The Plan of Analysis

The procedure used for the analysis is as follows:

Mokken (Gillespie et al,1988) analysis was used initially to determine if the word items could be combined to form a unidimensional scale representing cognitive functioning[6]. LISREL VI was also used at this point to supplement the Mokken analysis. Next, two-stage least squares regression was used to identify the variables to be used in the final LISREL model, as well as to get an indication of the effects of the endogenous variables on one another. The measures of the endogenous variables were aggregated to form indexes for this analysis.

LISREL VI was then used to generate a matrix of tetrachoric, polychoric, biserial, polyserial and Pearson correlations among the measures of the endogenous variables and the exogenous variables chosen on the basis of the MIDAS two-stage least squares analysis. A series of LISREL models were examined to test the measurement model and further refine the estimates of the effects. The possibility that some of the endogenous measures might be confounded with the exogenous variables had to be dealt with by systematically examining all the possible single equation models, using only one endogenous variable, followed by the more complex models.

First, the relationships between each endogenous variable and the exogenous variables were considered. By examining the simplest models first, this allowed us to determine if any effect of the exogenous variables on the

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[6] Mokken analysis is a variation of Guttman's dichotomous variable scale analysis.

measures of the endogenous variables remained after controlling for the effect of the exogenous variables on the latent endogenous variables. Such effects represent systematic measurement error. Second, all possible pairs of latent endogenous variables and the effects of the exogenous variables on these latent variables were analyzed. This step permits analysis of the reciprocal effects of the endogenous variables and the possible correlation (if any) between the latent endogenous variables while controlling for the effects of the exogenous variables. Finally, all four endogenous variables were analyzed in the complete model. The discussion of the results will focus on this final model.

The final LISREL measurement model relates the latent variables or factors to the measures. It also indicates the proportion of variance of each individual variable explained by the factor or index. The reliability of a factor is established by the magnitude of the explained variance of the individual variables. High reliability or freedom from random measurement error is a necessary but not sufficient condition of validity since systematic measurement error also contributes to the reliability of a measure.

C. The Variables

Table 5.1 lists the endogenous variables and their measures. The table also contains the labels to be used to refer to the variable in the subsequent discussion and the

TABLE 5.1
Measures of the Endogenous Variables

LABEL	TEXT	
Latent Variable 1: WORD – Knowledge of Words		
WORD1	SPACE (75%)	
WORD2*	BROADEN (87%)	
WORD3	EMANATE (23%)	
WORD4*	EDIBLE (89%)	
WORD5*	ANIMOSITY (70%)	
WORD6*	PACT (76%)	
WORD7	CLOISTERED (33%)	
WORD8	CAPRICE (30%)	
WORD9	ACCUSTOM (72%)	
WORD10	ALLUSION (22%)	
Latent Variable 2: HAPPY – Exogenous Depression		
HAPPY	"..would you say that you are:	3) very happy, 2) somewhat happy, or 1) not too happy?
HEALTH	"Would you say that your own health is:	4) excellent, 3) good, 2) fair, or 1) poor?
LIFE	"..do you find life:	3) exciting, 2) pretty routine, or 1) dull?
Latent Variable 3: RELIGID – Religious Identification		
RELITEN	"Would you call yourself a strong ____ (religion named by respondent in previous question), or not a very strong ____?	1) no preference 2) not very strong 3) somewhat strong 4) strong
POSTLIFE	"Do you believe there is a life after death?	1) no or undecided 2) yes
NEARGOD	"How close do you feel to God most of the time?	4) extremely close, 3) somewhat close, 2) not very close, or 1) not close at all

* Item used in the final four-item scale.

** Number in parentheses is the percentage of respondents who correctly identified the meaning of the word.

TABLE 5.1 (con't)
Measures of the Endogenous Variables

LABEL	TEXT	
Latent Variable 4: EUNOMIA – Measure 1 of Latent Variable 6: MEANING – Endogenous Depression		
ANOMIA 5	"In spite of what some people say, the lot of the average man is getting worse, not better.	1=yes 2=no
ANOMIA 6	"It's hardly fair to bring a child into the world with the way things look for the future.	1=yes 2=no
ANOMIA 7	"Most public officials are not really interested in the problems of the average man.	1=yes 2=no
Latent Variable 5: CONNECT – Measure 2 of Latent Variable 6: MEANING – Endogenous Depression		
FAIR	"Do you think most people would take advantage of you (1) or would they try to be fair (2)?	1) try to take advantage 2) try to be fair
TRUST	"Would you say that most people can be trusted (2) or that you can't be too careful in dealing with people (1)?	1) can't be too careful 2) can be trusted

wording of the question.

Measures of Cognitive Functioning

A test of cognitive functioning developed by Thorndike (1942) for use in survey research was administered to a random subset of the respondents. The test was chosen for its ease of administration and for its general reliability. Only those subjects to whom the test was administered will be included in the analysis. The respondent is presented with ten words. Along with each word, he or she is asked to shoose the correct synonym from a list of five words. The words are not presented in order of difficulty. The target words (those for which the respondent is required to find a synonym) are listed in Table 5.1. [7] Miner (1956) has argued that these items comprise a general measure of intelligence since they correlate highly with measures based on other commonly administered tests such as the Stanford-Binet and Weschler tests. The test gives an indication of both fluid and crystalized intelligence[8] by utilizing working memory when long-term memory is inadequate for the task. The test measures everyday cognitive functioning, specifically the individual's ability to cope with challenges and to draw on existing memory.

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[7] An example of the complete task cannot be included in this work due to the necessity of honoring the secrecy of the test.

[8] Fluid intelligence refers to active working memory, while crystalized intelligence refers to long-term, well encoded memory.

We treated as missing those respondents who were coded as missing on 7 of the 10 items. We did this to ensure that those respondents who were included had actually attempted at least a portion of the test. Those respondents who attempted some portion of the task were assumed to have been cooperative and those who did not attempt at least three of the ten trials were excluded. Among the remaining cases, trials where the respondent refused to answer were considered equivalent to errors since they were allowed to guess but chose not to. Thus, refusal to guess is considered equivalent to an error and therefore low cognitive functioning, while those who refused to comply altogether for reasons unknown were removed from the analysis completely. The proportion of respondents correctly identifying the meaning of each word is included with the description of the measures of the endogenous latent variables in Table 5.1.

Preliminary Mokken (Gillespie, Tenvergert & Kingma, 1988) scale analysis was used to see if the ten word items measure a single dimension representing cognitive ability. The analysis suggested that four of the ten words needed to be dropped from the analysis. Preliminary LISREL analysis of the tetrachoric correlations among the word items confirmed the results of the Mokken analysis; the results indicate that the same six word items form a single factor, while the remaining four items had to be discarded due to low reliability.

Subsequent LISREL analysis which included the exogenous variables (to be described fully in the section titled 'The Final Model'), indicated that two of the remaining six items were confounded with a number of the exogenous variables. Both were discarded for this reason. The remaining four word items were used to measure a factor which could be interpreted as an aspect of the respondent's cognitive functioning and ability to use language. As outlined previously, those respondents who refused to answer a minimum of three of the word items were not included in the analysis, and the four word items which form the final scale are relatively simple words (e.g. broaden, edible, animosity and pact). The majority of the respondents (at least 70%) were able to correctly identify the meaning of each of the remaining words (see table 5.1). The fact that some respondents were unable to identify these simple words supports the hypothesis that these individuals are functioning poorly relative to the majority of the respondents [9].

Measures of Depression

We originally chose eight variables to measure depression: three measures of anomia, two measures of trust in others, and three self-assessment questions refering to happiness, excitement in life and health. These items were

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[9]The use of these four words is also supported by the Mokken scale analysis since these four items yield the strongest evidence of unidimensionality.

chosen because they resemble some portions of the Brinks Geriatric Depression Scale and the PERI Depression Scale (both discussed earlier). A higher score on each of these measures represents a positive response, in other words, an absence of anomia or sadness, or a presence of happiness or health. Preliminary LISREL analysis of the eight items suggested the items were measuring two clearly separate dimensions of psychological well-being. These dimensions appear to capture the distinction drawn between exogenous depression and endogenous depression in the literature on depression. Exogenous depression is measured by the individual's self-reported happiness, health and how exciting he finds life. Endogenous depression is measured by the three items from Srole's Anomia Scale (Srole, 1956), plus the two measures of the individual's trust in others.

The three anomia items taken from Srole's Anomia Scale correspond most highly with the individual's sense of personal integration or personal value to society. The two measures of trust in others also reflect the individual's sense of personal integration in society. A negative response to these questions suggests a lack of connection with people and society, and indicate that the individual is estranged from the world.

Subsequent LISREL analysis with the exogenous variables indicated the need to treat the five items as measuring two factors: 'eunomia' and 'connectedness'. We treated these two factors as measures of a higher order factor which we label

'meaning'. This factor represents our operationalization of endogenous depression. Further discussion of this decision will be deferred until the section outlining the results of the analysis..

Measures of Religious Commitment

Religious committment is the fourth endogenous[10] variable. The three variables were chosen to represent the individual's level of commitment to a belief in some form of religion. The measures we chose to include in the analysis include: 'reliten' (a self-assessment of intensity or strength of commitment to religion[11]), 'postlife' (a belief in life after death) and 'neargod' (a self-assessment of feelings of nearness to God). The exact wording of the questions is given in table 5.1. The first two measures were originally coded so that a higher score represents a stronger commitment, and we recoded the third variable to correspond to this convention. LISREL analysis indicated that the three questions were measures of the same factor.

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[10]Religious identification was originally included as an exogenous variable. This decision was altered due to the preliminary analysis which indicated that religious identification acts more like an endogenous variable. The variable will be treated as an endogenous variable for the duration of the thesis.

[11]The respondent was first asked to specify his or her religious preference. The interviewer then asked the respondent how strong a '__' (religion named by the respondent), and provided two categories: strong and not very strong. Some respondents volunteered 'somewhat strong' and coding was adjusted to accomodate these responses. Respondents who stated no religious preference in teh first question were assigned a missing code by NORC. We scored them as least committed (1) and scored the rest accordingly (weak=2, somewhat strong=3 and strong=4).

measuring a separate psychological dimension from the other two factors described above.

These three factors represent different dimensions of the individual's psychological makeup and consequent ability to cope with everyday stressors. The level of anomia reflects the individual's sense of belonging, and, according to the theoretical framework outlined in chapter 3, should be causally prior to the level happiness, which indicates transient sadness, due to temporary stressors. Strong committment to a religious philosophy could act as a source of well-being by offering a 'sacred canopy'. Religion offers an explanation for unpleasant events while offering the promise of a better existence in the future.

Although one would expect religion to have a positive effect in reducing anomia similar to the effect on happiness, this relationship may be reduced due to the anomic world-view common to a number of fundamentalist religions. In addition, an anomic view of the world may encourage some individuals to seek a religion which supports this ideology and also offers a 'solution' in the form of post-life retribution.

The Exogenous Variables

The exogenous variables listed in Table 5.2 were chosen based on a review of the literature of related work (chapters 2 and 3). The reasons for including most of the variables have already been discussed in relation to the

TABLE 5.2
Measures of the Endogenous Variables

LABEL	DESCRIPTION
TRAUMA	# of traumas** last year (0–4)
INCOME	family income ($0–$60,000)
EDUC	respondent's schooling (0 years – 20 years)
COLGRD	(16 years of schooling = 1; other = 0)
DMARRY	marital status (not married=0; married=1)
PAED	respondent's father's schooling (0 – 20)
MAED	respondent's mother's schooling (0 – 20)
AGE	respondent's age (18 years – 89 years)
SEX	respondent's gender (0=male; 1=female)
AGESQ*	respondent's age squared
SEX.AGE*	product of sex times age
SX.AGESQ*	product of sex times age squared
SM.COL*	(13–15 years of school = 1; other = 0)

*Variable deleted from the final model.

**Trauma's include: divorce, unemployment, hospitalization/disability, death of a father, mother, sibling or sibling-in-law, and child or child's spouse.

theory and the model definition. It is only necessary at this point, therefore, to discuss those which were included as a result of the simultaneous two-stage regression analysis.

Following the preliminary LISREL analysis, we combined the measures of the endogenous variables into scales and regressed a variety of exogenous variables in order to select a subset for use in the final LISREL analysis, as well as to get an indication of the effects of the endogenous variables on one another. The exogenous variables we chose for the two-stage least squares regression analysis included: an aggregated measure of the number of traumatic events experienced by the respondent within the last year, the total family income, the respondent's education, father's and mother's education, a dummy variable for marital status (married=1), age, and a dummy variable for gender (female=1). A number of additional variables suggested by the literature review were included, but were discarded due to insignificant relationships at this stage of the analysis.

The variable identifying the number of recent traumatic events was included to indicate the number of temporary stressors affecting the respondent's level of exogenous depression. Temporary stressors are generally inadequately and inconsistently measured, but the respondent's perception of the number of serious life stressors does, in fact, reflect the measure desired for this research question. The

traumatic events measure used by the NORC survey is aggregated across the types of reported traumas (i.e. unemployment, illness, etc.), but to use the individual types of events would unnecessarily complicate the issue. The value of this variable is the total number of stressful events reported by the respondent; a larger number indicates more traumatic events.

The simultaneous two-stage regression analysis indicated that the word items were affected by the respondent's gender, age, education and mother's education. Male respondents, older respondents, those with lower levels of education, and those whose mother's had lower levels of education were more likely to respond incorrectly to the word items.

The exogenous depression or 'happiness' index was affected by age, gender, education, income, strength of religious commitment and marriage. Younger respondents, men and those with higher levels of education and income are more likely to respond positively to questions regarding happiness, as are married respondents and those with strong religious commitment. In addition, the happiness index was negatively affected by the number of recent traumatic events.

The variables affecting the anomia index were marriage, gender, education, income, and the level of education of both parents. Female respondents and married respondents were more likely to give eunomic responses, as were those

with higher levels of education, income and those with highly educated parents.

A number of interaction effects were also identified at this stage of the analysis. The word items were affected by the interaction of age and gender. Correct identification of the word items was lower for older men. This group of respondents were at a greater disadvantage than younger men or older women. The relationship between the word index and the respondent's level of education was also non-linear. A dummy variable measuring college graduation was created to address this non-linearity. Respondents with sixteen years of education score significantly higher than those with less than or those with more than four years of college. The exogenous depression index was also affected by the age-gender interaction term, but had a negative effect on older women rather than men.

The non-linear relationships identified by the two stage least squares analysis were eliminated from the LISREL model, with the exception of the effect of college graduation on anomia. Although the regression analysis indicated significant non-linear relationships between education and both the word index and the anomia index, non-linear effects of age and gender on the word index, and interaction effects between age and gender on both the word index and the happiness index, these were proven insignificant in the LISREL analysis. These effects will not, therefore, be discussed any further.

VI. Findings

A. LISREL Analysis

Table 5.3 shows the loadings of the measures on the latent endogenous variables they are intended to measure, as well as the reliabilities of each of these measures.

The factor identifying general cognitive ability (WORD) explains a significant amount of the variance in the individual word items included in the analysis. The second word item was used to define the factor by fixing the loading at one. As indicated by the magnitude of the r-square, the factor explains a significant amount of the variance in this item (.849). The factor explains .620 of the variance of the fourth and fifth items and slightly less variance of the sixth item (.560). The four items included in the analysis adequately measure the factor. (The loadings listed in the table are slopes which indicate the change in the item per unit change in the latent variable.)

Happiness (exogenous depression, labelled HAPPY on Table 5.3) is measured by three variables: the respondent's level of happiness, whether he feels life is exciting, routine or dull, and self-reported health status. We used the EXCITE variable to identify the happiness factor. This factor explains .692 of the variance in the EXCITE variable, .485 of the variance in the happiness measure, and .255 of the variance in the respondent's health status.

Table 5.3
Item Reliabilities[a] and Loadings on the Latent Variables They Measure

Item	R^2	Latent Variable					
		WORD	HAPPY	RELIGID	EUNOMIA	CONNECT	MEANING[b]
WORD2	.849	1.0					
WORD4	.620	.861					
WORD5	.620	.861					
WORD6	.560	.664					
HAPPY	.485		.801				
HEALTH	.255		.456				
EXCITE	.692		1.0				
RELITEN	.378			.708			
POSTLIFE	.284			.629			
NEARGOD	.582			1.0			
ANOMIA5	.308				.647		
ANOMIA6	.735				1.0		
ANOMIA7	.428				.647		
FAIR	.634					1.0	
TRUST	.634					1.0	
EUNOMIA	.781						1.0
CONNECT	.383						.626

[a]The item reliability (R^2) equals the proportion of the item variance explained by the latent variables. In the case of some items a small portion of the reliable variance is due to the effect of variables other than the one measured by the item.

[b]MEANING is a latent variable that is measured by the latent variables EUNOMIA and CONNECT.

[c]Loadings equal to 1.0 are fixed, and some non-unit loadings are constrained to equal one another.

The RELIGID factor, identified by the respondent's conception of nearness to God accounts for .378 of the variance in the intensity of religious committment, .284 of the variance in belief in life after death, and .582 of the variance in the respondent's perception of nearness to God. With the exception of POSTLIFE, the loadings of the variables as outlined on the table are relatively high, indicating that the factor is well defined.

Although the initial LISREL analysis suggested that the five eunomia items (ANOMIA5 through TRUST) measure a single factor, introduction of the exogenous variables suggested otherwise. Age, sex and mother's education (MAEDUC) affect the three anomia items and the two trust items differently. It was therefore necessary to identify two lower order factors (EUNOMIA and CONNECTION) due to these differing effects. The higher order factor was labelled MEANING, since we felt that the combination of both factors corresponds to the theoretical construct of endogenous depression, but MEANING is mainly measured by the eunomia factor since the anomia items dominate the explained variance in the MEANING factor. The EUNOMIA factor reflects the individual's sense of the future, and the CONNECTION factor indicates the individual's sense of belonging within the society, and the society's committment to her. EUNOMIA accounts for .308 of the variance of Srole's fifth anomia item, .735 of the variance of the sixth item, and .428 of the seventh. There is some systematic measurement error associated with the

seventh anomia item, since the loading of this measure on CONNECTION is significant. The source of this contamination may be explained by the political and trusting aspects of this particular item. CONNECTION accounts for .634 of the variance in the two variables used to measure it. The higher order factor (MEANING) explains .781 of the variance of the first lower order factor (EUNOMIA) and .383 of the second factor (CONNECTION). The higher order factor (MEANING) reflects, according to the theoretical argument made in chapter 3, the individual's sense of meaning in life. MEANING is identified by the EUNOMIA factor, and the loading of CONNECTION on MEANING is .626.

Table 5.4 contains the loadings of the measurement items on the variables other than those they are intended to measure. The (estimated) effect of an exogenous variable on a measure represents the contamination of the measure by these other variables and can be considered systematic measurement error. The effect of RELIGID, for example, on WORD5 (animosity) is positive. People who identify with religion are more likely to know the meaning of animosity (controlling for their general knowledge of words). The other significant loadings include marriage on EXCITE and NEARGOD, and WORD on POSTLIFE. Due to the fact that HEALTH measures the respondent's actual health status, the correlation between this variable and the exogenous depression factor is, as would be predicted, lower than the first two measures(EXCITE and HAPPY). In addition to the

Table 5.4
Loadings of Items on Variables other than the Latent Variables They Measure[a]

Item	Confounding Variable						
	WORD	RELIGID	CONNECT	AGE	MARRIED	EDUC	COLGRAD
WORD2							
WORD4							
WORD5		.205					
WORD6							.275
HAPPY							
HEALTH				-.158		.185	
EXCITE					-.305		
RELITEN							
POSTLIFE	.181			-.290			
NEARGOD					-.454		
ANOMIA5							
ANOMIA6							
ANOMIA7			.233				
FAIR							
TRUST							

[a] The item reliability (R^2) equals the proportion of the item variance explained by the latent variables. In the case of some items a small portion of the reliable variance is due to the effect of variables other than the one measured by them.

low reliability of HEALTH, this item is contaminated by two exogenous variables: age and education. HEALTH is negatively affected by age and positively affected by education level. Two of the measures of religious commitment have small loadings on variables other than those they are intended to measure. POSTLIFE (a belief in life after death) loads positively on WORD and negatively on age, while NEARGOD loads negatively on the dummy variable for marriage. These effects are required to achieve a good fit of the model, but the confounding effects are small: Even though some systematic measurement error exists in addition to random measurement error, the amount of the error is small. The measures appear to be reasonably valid.

The model fits the variance-covariance matrix well as indicated by the goodness of fit index (.978) and the average discrepancy between the theoretical and implied correlation (.044).

B. The Effects of the Exogenous on the Endogenous Variables

The structural model indicates which exogenous variables affect the endogenous variables. As outlined in the model, a number of variables representing the respondent's social environment were included in the analysis to determine the social causes of the different factors.

Table 5.5 reports the direct and total effects of the exogenous variables on the latent endogenous variables.

Total effects are in the parentheses. They represent the direct effects plus the (total) indirect effects. We will discuss the total effects only when they differ substantially from the direct effects, that is, when there is a sizeable indirect effect.

WORD is affected by respondent's education (.123), mother's education (.150), age (.179) and gender (.247) as expected. Although research often indicates that the effects of these variables on cognitive functioning are non-linear, this was not supported by the LISREL analysis.

HAPPY (exogenous depression) is negatively affected by the number of recent traumatic events (-.112) and positively by father's education (.182). Gender has a minor effect on HAPPY (-.060). Men are somewhat happier than women. Those respondents whose fathers had a higher level of education are less likely to respond with these symptoms than respondent's whose fathers had lower levels of education.

Religious commitment is affected by marriage (.392), father's education (-.094), age (.169) and gender (.217). The dummy variable for marriage has the strongest effect on religious commitment. Married respondents score on average .400 standard deviations higher on religious commitment than do unmarried respondents.

MEANING is positively affected by income (.159), and education (.183). Respondents with higher income levels are more likely to have a sense of meaning in life, as are those with higher levels of education. The non-linear effect of

Table 5.5
Direct and Total Effects* of Exogenous Variables on the
Latent Endogenous Variables

Exogenous Variables	Latent Endogenous Variables					
	WORD	HAPPY	RELIGID	EUNOMIA	CONNECT	MEANING
TRAUMA	0.000	−0.112	0.000	0.000	0.000	0.000
		(−0.138)				
INCOME	0.000	0.000	0.000	0.000	0.000	0.159
						(0.262)
EDUC	0.123	0.000	0.000	0.000	0.000	0.183
	(0.268)			(0.270)	(0.182)	(0.325)
COLGRAD	0.000	0.000	0.000	0.000	0.000	0.155
	(0.106)	(0.092)		(0.212)	(0.143)	(0.256)
MARRIED	0.000	0.000	0.392	0.000	0.000	0.000
		(0.278)	(0.456)			
PAED	0.000	0.182	−0.094	0.000	0.000	0.000
		(0.158)	(−0.110)			
MAED	0.150	0.000	0.000	0.068	0.000	0.000
	(0.177)			(0.104)		
AGE	0.179	0.000	0.169	−0.124	0.221	0.000
	(0.176)		(0.185)	(−0.089)	(0.315)	
SEX	0.247	−0.060	0.217	0.000	0.080	0.000
	(0.240)	(0.004)	(0.236)		(0.143)	

*Total effects are reported in parentheses below the direct effects. Total effects with an absolute value of less than .1 are not usually reported.

education on MEANING was retained in the final analysis. Respondents with sixteen years of schooling are more likely to find meaning in life (.155) than those with less than or those with more than sixteen years of education.

There is a negative effect of age (-.124) on EUNOMIA, while mother's education has a slight positive effect (.068). Age has a positive effect on CONNECTION (.221), and gender has a slight positive effect. (Women trust people somewhat more than men do.) The difference in magnititude and direction of the effect of age, gender and mother's education on the anomia and trust items was the primary reason for treating them as two lower-order factors.

There are a number of variables worth mentioning which have a total effect greater than the direct effect. The total effect of income on MEANING is greater than the direct effect. Since MEANING then affects WORD, this results in a feedback loop of reciprocal effects. The total effect of income is thus greater than its direct effect. Education has a higher total effect on WORD through its effect on MEANING. Although there is no direct effect of education on either EUNOMIA or CONNECT, the total effects on both variables are significant. The most dramatic effect is the total effect of MARITAL on HAPPY. This effect is indirect; it occurs through the effect of MARITAL on RELIGID and the effect of RELIGID on HAPPY.

C. The Effects of the Endogenous Variables on One Another

Simultaneity bias was previously mentioned as a determining factor in the choice of analysis. Ordinary regression analysis cannot estimate the effects of one endogenous variable on another. In order to get an estimate of the reciprocal effects using LISREL VI, an exogenous variable is used as an instrument for measuring the endogenous cause. The exogenous variable must directly affect the endogenous cause, but have no direct effect on the endogenous dependent variable. Education could thus be used as an instrument for MEANING when estimating the effect of MEANING on HAPPY because education directly affects MEANING, but has no direct effect on HAPPY.

TRAUMA serves as an instrument for HAPPY where WORD, RELIGID, and MEANING are the dependent variables, since TRAUMA affects HAPPY but does not directly affect the three dependent variables. In addition, PAED can act as an instrument for both HAPPY and RELIGID where WORD and MEANING are the dependent variables. GENDER can be used in place of WORD, RELIGID and HAPPY where MEANING is the dependent variable. Likewise, INCOME acts as an instrument for MEANING where HAPPY, WORD and RELIGID are the dependent variables. EDUC serves as an instrument for WORD and MEANING where HAPPY and RELIGID are the dependent variables and COLGRAD serves as an instrument for MEANING where HAPPY, RELIGID and WORD are the dependent variables. MARRIED can be used in place of RELIGID where WORD, MEANING and HAPPY are the

dependent variables, and AGE can serve as an instrument for both WORD and RELIGID where HAPPY and MEANING are dependent. Finally, MAED can be used in place of WORD where HAPPY, RELIGID and MEANING are the dependent variables. In this manner, a number of measures can serve as instruments for the endogenous variables to allow estimation of the reciprocal effects.

Table 5.6 reports the direct effects of the latent endogenous variables on each other. (The size of the coefficients indicates which relationship accounts for the majority of the variance of the dependent variables.) Table 5.6 also reports the the percentage of variance in the latent endogenous variable explained by the effects of the exogenous variables and other endogenous variables.

The direct effect of MEANING on WORD is .520. The reciprocal effect is only about a quarter the magnititude at .167. This result suggests that cognitive ability is a function of the respondent's sense of meaning in life, rather than a cause. MEANING also has a direct effect on HAPPY of .610 which is greater than the magnitude of the reciprocal relationship of HAPPY on MEANING (.140). Again, this result suggests that MEANING exerts the bulk of the causal influence in the relationship. This result is consistent with our interpretation of MEANING as 'endogenous depression', representing impairment on the ultimate level which has a direct effect on (relative proximate) exogenous depression (Lifton, 1976).

Table 5.6

Direct Effects (Standardized Slopes) of the Latent Endogenous Variables on One Another

Dependent Variables	Causal Variables				R^{2**}
	WORD	HAPPY	RELIGID	MEANING	R
WORD	-*	-	-0.260	0.520	0.491
HAPPY	-0.299	-	0.471	0.610	0.582
RELIGID	-0.054	-	-	-	0.375
MEANING	0.167	0.140	0.080	-	0.630

*The symbol "-" denotes coefficients set equal to zero.

**R represents the portion of variance explained by both the exogenous and endogenous causal variables.

A surprising finding is the negative effect of WORD on HAPPY (-.299). Respondent's who have a better understanding of the words are less happy [12].

RELIGID has a negative effect on WORD (-.260), a positive effect on HAPPY (.471), and a small positive effect on MEANING. Those with a stronger religious commitment are happier but perform poorly on the cognitive task compared to those respondents with a weaker religious commitment. The negative effect of religious commitment on cognitive ability is surprising, although Berger's theory of the effect of religion as a 'sacred canopy' would suggest that the relinquishment of control over the future (and allowing someone else to do the thinking) should correlate with lower cognitive functioning. With the exception of the small negative effect of WORD (-.054), RELIGID is unaffected by the other endogenous variables, so that religious committment operates like an exogenous variable, even though we allowed for the possibility of reciprocal effects.

The effect of WORD on HAPPY is negative (-.299) but there is no reciprocal effect of HAPPY on WORD. There is, however, an indirect reciprocal effect of HAPPY on WORD through MEANING, but it is small[13]

Table 5.7 reports the correlations between the latent endogenous variables. These correlations are, for the most

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[12]Lifton's work suggests that this relationship is due to the 'bittersweet aspect to knowledge', since education and learning are often accompanied by an understanding of the dilemmas of modern society.

[13]The product of the paths is used to calculate the indirect effect of HAPPY on WORD (i.e. .140 x .520 / 1+ .299 = .056).

Table 5.7

Correlations of the Latent Endogenous Variables with One Another						
	Variable					
Variable	WORD	HAPPY	RELIGID	EUNOMIA	CONNECT	MEANING
WORD	1.000					
HAPPY	-0.036	1.000				
RELIGID	-0.181	0.498	1.000			
EUNOMIA	0.509	0.425	0.017	1.000		
CONNECT	0.349	0.281	0.154	0.241	1.000	
MEANING	0.582	0.505	0.093	0.863	0.543	1.000

part, accounted for by the direct effects listed in Table 5.6. There is one correlation, however, which is not accounted for and therefore requires some elaboration. The correlation between WORD and HAPPY is much lower than expected (-.036), given the size of the negative effect of WORD on HAPPY. This decrease in magnitude results from the indirect effects of HAPPY on WORD through the direct effects of HAPPY on MEANING. Although HAPPY has a direct negative effect on WORD, it has a smaller positive direct effect on MEANING which has, in turn, a positive effect on WORD. This results in a small correlation which, on closer inspection, appears quite significant. The relationship between WORD and HAPPY would be suppressed without the indirect effects because of the strong positive effect of MEANING on both WORD and HAPPY. Variation in MEANING confounds the WORD-HAPPY relation.

The size of the squared multiple correlations for the four factors described above indicate that the model is valid. A large squared multiple correlation indicates that the model as defined adequately describes the variance in the data. The squared multiple correlation for WORD is .491, .582 for HAPPY, .375 for RELIGID, and .630 for MEANING. The two lower order factors are also adequately defined. The squared multiple correlation for EUNOMIA is .781, and .383 for CONNECTION. This indicates that the factors as defined explain a significant amount of the variance in the variables chosen to describe them.

VII. Conclusion

The goal of this thesis is to determine whether or not a relationship exists between cognitive functioning and depression or depressed psychological well-being as well as the direction of the effects. Research published in the psychological literature suggests that there is a relationship between cognition and depression, but no consensus has been reached indicating whether the depressed individual actually suffers decreased cognition or whether the relationship is due to decreased motivation. In addition, the existing literature can not define the primary causal sequence (whether depression causes decreased cognitive functioning or lower cognitive functioning leads to depression).

In order to study this question, a theoretical basis for operationalization was found in the sociological literature. Symbolic Interaction theory focuses on the central role of language in human understanding and development. This focus is particularly relevant to our examination of the Thorndike cognitive task, since this reflects (as do most cognitive tasks) language skills. The works of Lifton and Becker provide the necessary theoretical link between symbolic interaction theory and depression. Each theorist provides a different outline of the causal connection between cognition and depression [14]. Becker's discussion of depression as stupidity could be simplified to

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[14]Although both theorists would argue for a much more complex relationship than that argued in this thesis.

suggest that depression is caused by an inadequate or absent vocabulary of motives for interpreting the crises that occur during the individual's life. Lifton's discussion suggests that decreased cognitive functioning results from the psychic numbing which accompanies depression.

These theoretical frameworks result in the two opposing hypotheses which were examined in this paper:

1. Low cognitive functioning causes depression

2. Depression causes decreased cognitive functioning.

These hypotheses were tested using data available from the 1987 and 1988 NORC General Social Survey.

The sample was chosen because of the ease of availability, but has the added advantage that survey data allowed us to move beyond the limitations of clinical samples of depressed respondents. The survey incorporates a measure of cognitive functioning, but no standardized measure of depression. We chose to use a series of anomia, happiness and trust in others items, since these items closely resemble those used in standard measures of depression. These items do not, however, include the more extreme symptoms of clinical depression. This choice seems justified in light of the fact that there is, as yet, no measure of depression which is widely agreed upon.

Although the original goal of the research was to keep the definition of depression simple, our attempt to use the items as an index to measure depression gave rise to the necessity of the distinction between endogenous and

exogenous depression. The distinction outlined in the psychological literature interprets the two types of depression based on the percieved cause. Exogenous depression has a proximate (reasonable) cause and can be considered to be a normal reaction to a traumatic event(s). Endogenous depression has no apparent cause and therefore, according to the psychological literature, originates within the individual. In addition, endogenous depression, since it has no obvious external cause, is often viewed as more severe.

Endogenous depression may be more serious, since it is not a simple reaction to trauma, but the term 'endogenous' suggests that this form of depression is totally without cause. While the cause may not be recent enough to be obvious, I would argue that a cause still exists. In other words, the cause may stem from childhood or early adulthood.

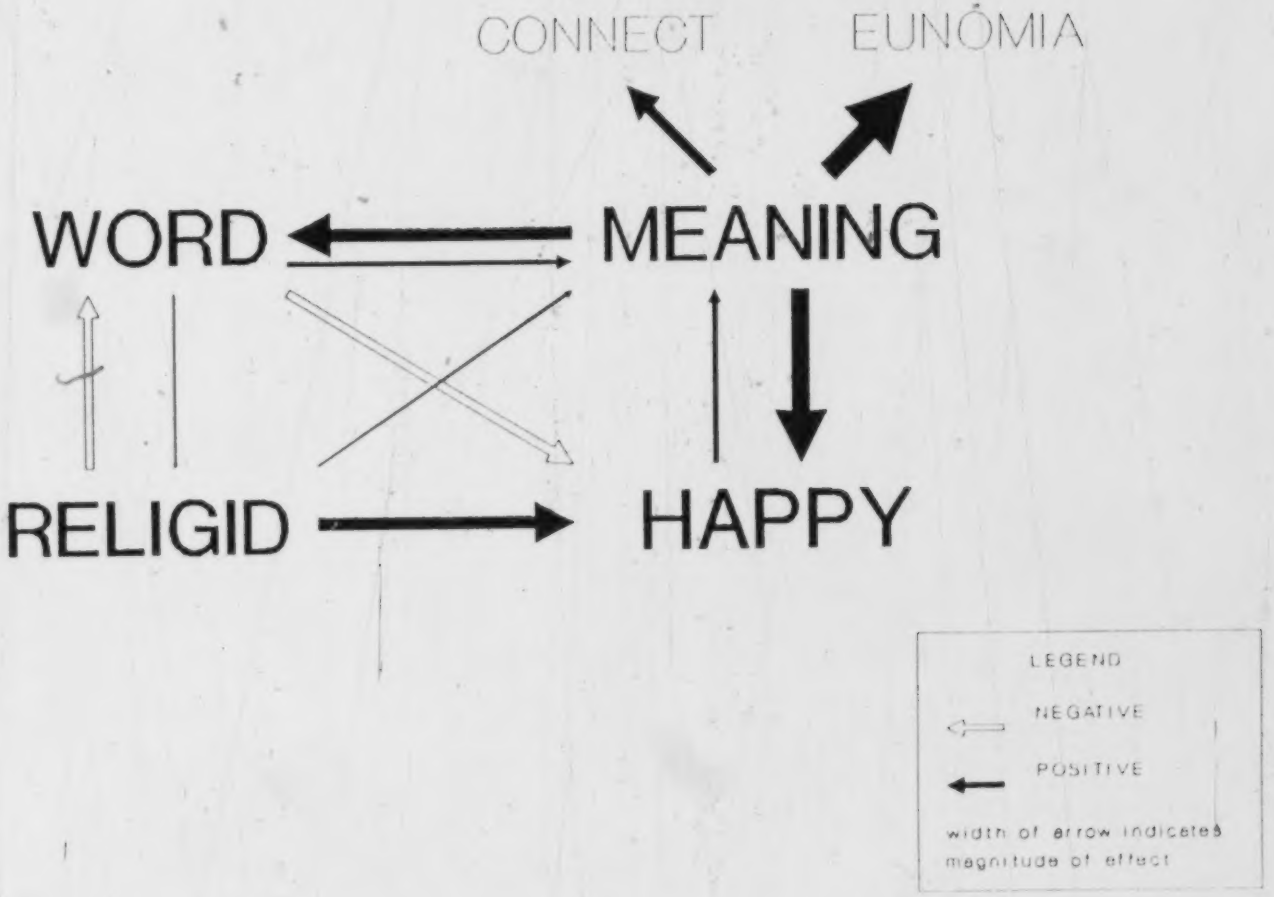
The distinction between the two types of depression is elaborated in Lifton's distinction between proximate and ultimate impairment of personal feelings of vitality. Impairment occurs, according to Lifton, on the proximate level due to some form of loss, and on the ultimate level due to an absense of symbols, or a confrontation with personal mortality. The importance of Lifton's distinction to this paper lies in the difference in the content of the two sets of items that measure the two factors labeled HAPPY and MEANING, particularly the anomia items which primarily define the MEANING factor.

A number of exogenous variables were required to identify any reciprocal causation among the endogenous variables (WORD, HAPPY and MEANING). The variables were chosen based on a literature review and some preliminary analysis. The exogenous variables are: RELIGID, TRAUMA, INCOME, EDUC, COLGRAD (to capture the non-linear effect of education), MARRIED, PAED, MAED, AGE and SEX. RELIGID was treated as an endogenous variable rather than an exogenous variable, due to the subjective nature of the variable. Table 6.1 is a path diagram of the endogenous model indicating the magnitude of the relationships by the width of the arrows.

The distinction between exogenous depression (HAPPY) and endogenous depression (MEANING) is supported by the analysis. HAPPY is affected by the proximate level variable TRAUMA, but TRAUMA does not have a direct effect on MEANING. In addition, MEANING exerts the majority of the causal effect on HAPPY, although there are some reciprocal effects. This represents the relative seriousness of impaired meaning - impaired meaning results in impaired happiness. The small reciprocal effect indicates that impaired happiness can also evolve into impaired meaning. This suggests that there is a risk of exogenous depression developing into endogenous depression.

The variables AGE, SEX and MARITAL (through RELIGID) condition the individual's current environment and have a corresponding effect on HAPPY. The variables representing

TABLE 6.1 **The Endogenous Model**



socio-economic status (INCOME, EDUC and COLGRAD) have an impact on MEANING because they represent the respondent's situation during adolescence and early adulthood, and thereby the development of his outlook on life. Since this assumes, among other things, that the socio-economic variables are causally prior to MEANING, this interpretation requires further research prior to its acceptance. Further research possibilities include testing the foregoing causal sequence against an alternative sequence wherein MEANING is placed causally prior by using the respondent's family status as an instrument.

In agreement with Seligman's findings, the relationship between depression and cognition is limited to the relation between MEANING and WORD. However, although the relationship is reciprocal, the majority of the causal influence is exerted by MEANING on WORD. Of the two opposing hypotheses to be tested, the direction of the causal influence supports Lifton's position that depression reduces psychic energy and therefore 'stupidity' results from, rather than causes, depression.

In addition, Seligman did not find the negative effect of WORD on HAPPY, likely because he didn't look at the relationship between the variables in terms of a causal model. The relationship between WORD and HAPPY is suppressed by the positive effects of MEANING on both variables.

An unexpected byproduct of the analysis is the mechanism through which being married increases happiness.

Married people are more likely to identify with a religion, and it is the religious identification which provides the source of happiness or satisfaction with life. This finding must be qualified, however, since systematic measurement error indicates that, controlling for religious identification, married respondents are less likely than unmarried respondents to feel near to God, and, controlling for HAPPY, they are less likely to indicate they find life exciting. This finding raises the question of the validity of the model of 'social support' supplied by marriage. The relationship indicated by this analysis suggests that it is not the set of roles which supports the individual, but rather the set of meanings (or sacred canopy). A future research program might include examining this relationship in detail, including more measures of religious attitudes and behavior.

A finding which would be of interest to sociologists of religion is the negative effect of religious commitment on WORD. In light of Berger's theory, this finding could be interpreted as suggesting that religion, in removing the blame for the social environment from the individual to an unknown being, encourages the individual to escape reality altogether. In other words, 'bliss is ignorance'.

Another interesting result is the negative effect of WORD on HAPPY. If it weren't for their stronger sense of meaning, knowledgable people would be less happy. This, in essence, contradicts Sigelman's finding and suggests that

'ignorance is bliss'.

Another important direction for further research is to explore the relationship between meaning and social class. Introduction of occupational prestige scores, racial differences, and further consideration of the influence of the childhood environment would clarify a number of concerns generated by this research question. In addition, we did not consider the possibility that education and income could be a consequence of meaning. In this case, the family background variables would assume even greater importance.

The most important suggestion for further research would be replication of the analysis using a standardized depression scale. Although this research was not done using a standard scale, the need for differentiation is still supported by the literature, and further analysis of the existing scales and the causal connections between the various types of depressed psychological well-being seems necessary.

Alternatively, a consideration of other types of cognitive tasks would clarify the relationship between meaning, cognition and vocabulary, since the verbal aspects of the cognitive task may be the primary cause for the relationship. A complete research program might include a variety of cognitive tasks and a standard measure of depression. This approach would require the addition of the anomia items, since the analysis indicated that they have a strong relationship.

A research program examining the anomia items in detail to determine the relationship between the anomia items and other variables would also be of value. The entire set of Srole's anomia items could be used in a replication of the above analysis to provide more support or to qualify the results.

Finally, LISREL7 could be used to replicate the results using a more appropriate procedure for working with dichotomous variables. Although it is unlikely that the use of these methods would substantially alter the results, this possibility needs to be tested.

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